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ABSTRACT

Demand for courses in population problems has increased along with growing public awareness and concern for population-related matters. This paper describes an undergraduate classroom experience which provides an alternative approach to teaching population problems by replacing usual educational materials with selections from science fiction literature. A justification for the use of science fiction is that it coincides with one of the primary goals of sociology, the prediction and understanding of human behavior in its social context. A one-quarter, sophomore-level, introductory course is discussed in terms of student motivation, teacher objectives, and course structure. Course sections on growth, vital processes, and population policy rely on science fiction and traditional readings, class presentations, and class discussion to indicate some of the wide-ranging relations that exist between population phenomena and the gamut of social-structural phenomena. Evaluation of the approach is positive as based on increased student interest and participation, even though the coverage of subject matter is somewhat reduced. A briefly annotated bibliography of science fiction and suggested testing options are appended. (Author/KSM)

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TEACHING POPULATION THROUGH SCIENCE FICTION

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SP 007 577

Paper to be presented at the meetings of the Population Association of America, New York, New York, April 18-20, 1974.

Not for Quotation

Introduction

There is little doubt that demand for courses in population, especially population problems, has increased tremendously over the last few years. With the growing public awareness of, and concern for, population-related matters--food shortages, urban problems, the energy crisis--students in colleges and universities around the country are clamoring for seats in sugh highly "relevant" courses.

Those of us that teach such courses, however, must resolve the problems with which we are thus faced (see for example, Marden, 1972). Class sizes have increased. No longer do we have only the small cadres of graduate and/or advanced undergraduate students with substantial preparation in the social sciences. Increasingly, we are drawing from newer, younger students with less background. Moreover, when these students struggle with the complexity of our subject matter, we can no longer count on them to "pick it up" in a course further along in the program. Sizeable numbers, especially those in the inevitable "Population Problems" course, do not continue in the program. One course, be it "An Introduction to Population" or "Population Problems," will provide many with their only exposure to the field.

Consequently, we must continually seek new ways of achieving our educational objectives. This paper describes a classroom experience which may provide an alternative approach to the teaching of population problems. Here, in place of some of the usual podagogical materials, I have included selections from the science fiction literature. The paragraphs to follow will provide an argument (justification) for the use of science fiction in teaching population. Then, the structure of the course itself will be described. Finally, an evaluation will be offered.

Population Studies and Science Fiction

Some years ago, when I was a doctoral student attending my very own "Introduction to Population" course, I listened to Amos Hawley characterize the practitioners of Population Studies (as distinct from Demographers*) in terms of their focus upon the *relations* between population phenomena and other social-structural phenomena. As a sociologist, this seemed to me to be a particularly useful approach to the study of population. Then, for the remainder of the semester we were exposed to a variety of skills and techniques--basic demography. Apparently, the assumption was that students should have a solid foundation in "pure" demography before further complicating it.

About three years later (and a half-dozen seminars in various aspects of population and demography), I was chosen to teach what was then a new course at the University of North Carolina--"Population Problems." Here too, my emphasis was upon the exposure to and the understanding of basic dempgraphy--how else could one properly understand the "pcpulation crisis," and evaluate the public utterings of "activists" such as Paul Ehrlich.

Today, while I continue to accept the premise that population studies requires a firm foundation in basic demography, I also realize that my audience is quite different than that of five or eight years ago. The students in "Population Problems" today, although younger and less experienced, are exposed to a wide variety of population-related matters through the mass media. Therefore, it seems wasteful to drown their interest and motivation

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*Although this and other distinctions exist within the general area of population, the issues raised thusly will not be treated in the present paper.

in a sea of rates and ratios. (This issue, of course, is addressed in detail by Professor Poston.)

This is not to say I ignore basic demography. Although the quarter is short, I manage to cover some of the basic paraphernalia (crude rates, age-specific rates, population pyramids, sex and dependency ratios, and so on). Rather, my emphasis is placed differently. In the past, it seemed most important to try to impart a full understanding of a specific technique and the subtleties of its application. Now, I am more concerned with its utility in illustrating the nature of population phenomena, or in clarifying the relationship between some population "event" and some other social-structural "event." It is these interests that have brought me to the science fiction literature. Perhaps, through it, I can convey the necessary information and still keep the students' interest high.

I view as one of the primary goals of Sociology *the prediction and understanding of human behavior in its social context.** I submit that science fiction attempts the same thing--the prediction and understanding of behavior in its context. The difference is that science fiction need not deal only with "real" behavior in any "present" or "past" context. It does not even need to be "human." Even so, the science fiction writer does not have complete freedom; his work--to gain praise from his peers--must still portray a "reasonable" activity in a "reasonable" context. It is just that the "reasonableness" is no longer necessarily a function of the real world; it becomes largely a matter of logical consistency within a world created by the author.

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*Perhaps some would argue that ultimately these should--or at least will--be followed by the *Control* of human behavior as well.

By way of illustration, consider the family. One of its primary functions is that of procreation and the protection (nurturing) of those offspring until they are able to survive on their own. Yet, in Huxley's Brave New World, where procreation is carried out in test tubes and the "state" assumes the protective function, the implications for "the family" are extreme--extreme, but reasonable.

IN ONE COURSE--ONE QUARTER

In the Department of Sociology at Colorado State University, we have one sophomore-level introductory class in population which also doubles as a course in population problems: S-220, "Population: Analysis and Problems."* Although several of us teach the class in the course of the school year, we all share the conviction that both of its components are essential. For example, it appears to be easier for students to follow a discussion of age differentials in mortality if they have previously been exposed to age-specific mortality rates, their computation, and their interpretation. Similarly, when students possess a clear understanding of the basic population equation ($P_{t+1} = P_t + B_{t,t+1} - D_{t,t+1} \pm M_{t,t+1}$), its components, and the notion of "doubling time," they have little difficulty assessing the position in which many of the world's underdeveloped countries find themselves.

Although the quarter is short, time has typically not been of crucial importance; most of us have settled upon an acceptable range of topics that can be covered in the allotted ten weeks. Instead, the major difficulty we face has been one of motivation. From the front of the room, there is no

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*The only other undergraduate course in our "population program" is at the senior level, focusing on the demographic transition and comparative historical and theoretical studies. A course in "Demographic Techniques" is taught, but only at the graduate level.

doubt in my mind that students participate more, are more attentive, and are more interested when the topic is one of current critical relevance (or even historical, especially when it sets the stage for the present). But when the time comes to introduce a new bit of information, say the dependency ratio or the effect of birth and death rates on the age distribution, the atmosphere quickly cools.

It is exactly this kind of "on-again, off-again" behavior I have tried to overcome with my sojourn into science fiction. My expectations were that the class would (1) actually read and remember the assigned materials (at least the science fiction); (2) maintain a strong interest in all class presentations because of direct or indirect relevance (to current societal ills in the former, to the science fiction in the latter); and (3) therefore, better learn and be better able to apply the information they have acquired about population and its relations throughout the social structure.

Before describing the actual course structure, one further point must be made. Much in the way of my high expectations rests on the selection of course materials, assignments, and tests (see Appendices B and C). The selection of a "traditional" text (an essential, in my view) is no easy matter. Most are extremely long, rather "dry," and, from the students' point of view, frankly boring. David Heer's short volume, Society and Population, has been a good compromise.* (The students still don't like it, but they do read it.)

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*Ralph Thomlinson's little book, Demographic Problems, would be good but for the too-heavy focus on problems. (I do like, however, and still use his dedication-- To the man I would most like somehow to have given another twenty years of life: *Wolfgang Amadeus Mozart* -- One of seven children, five of whom died within six months of birth; Father of six children, only two of whom lived six months; Himself a survivor of scarlet fever, smallpox, and lesser diseases, Only to die at the age of thirty-five years and ten months, From a cause not diagnosable by the medical knowledge of his time; Thus making his life demographically typical of most of man's history.)

The selection of the science fiction materials is even more difficult. First, you must decide what to use: books, excerpts, short stories, or some combination. In my own case, I chose short stories; they seemed better suited to the role of illustrative materials. They are also more practical in that they require less of the students' time. (In contrast, however, they are also sometimes more difficult to acquire.)

After you have decided upon the particular vehicle, then you are faced with the real problem--a seemingly endless supply that must be sifted and sorted, read, reviewed, and reread. In my own case, I have gone through more than 200 individual short stories (some, more than once) to produce the 40-50 listed in Appendix A.* All of these, however, are clearly relevant to some aspect of population or social structure in general, and, at the same time, can be used to illustrate some facet of today's real world (either by comparison or contrast.)

The Course Structure

The subject matter of the course is divided into four major sections: Introduction, Growth, Vital Processes, and Policy. These correspond nicely with the Heer text, his first three chapters fitting into the Growth section, the next four in the section on Vital Processes, and the last three under Policy. An abbreviated outline, including the science fiction readings, is presented below. The four sections usually require about two weeks, three weeks, two weeks and two weeks, respectively. This leaves the last week for class presentations by the student groups (see Appendix C).

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*This was no small task, and had it not been for a long-standing affection for the genre, would probably not have been accomplished. I do not recommend doing it the way I did unless you simply <u>enjoy</u> Science Fiction.

I. Introduction to Population and Science Fiction

II. Population and Growth
Heer, Chapter 1, "The Growth of World Population"
Heer, Chapter 3, "The Geographic Distribution of Population"
A. Technology
Brown, "The Waveries"
Mille, "After Three Hundred Years"
B. Density
Heer, Chapter 2, "Future Human Societies and Their Environmental Constraints"
Vonnegut, "Tomorrow and Tomorrow and Tomorrow"
Ballard, "The Subliminal Man"
Sheckley, "The People Trap"
C. Pollution
Goulart, "Disposal"
Blish, "We All Die Naked"
Russell, "The Darwin Sampler"

III. The Vital Processes
Heer, Chapter 6, "Migration"
A. Birth
Heer, Chapter 5, "Fertility"
Aldiss, "Randy's Syndrome"
B. Maturation
Heer, Chapter 7, "Age-Sex Composition"
Jorgenson, "Coming-of-Age Day"
Reed, "Golden Acres"
C. Death
Heer, Chapter 4, "Mortality"
Goulart, "Terminal"

IV. Population and Policy
Heer, Chapter 8, "Population Growth and Economic Development"
Heer, Chapter 9, "Population and Political Power"
Heer, Chapter 10, "Population Legislation and Policy"
Disch, "Problems of Creativeness"
Ellison, "'Repent, Harlequin' Said the Ticktockman"
Goulart, "Broke Down Engine"
Blish, "Statistician's Day"

The first section fulfills two major functions. First, some basic demographic information is introduced (crude and age-specific rates, the basic population equation, sex and dependency ratios, and the notion of "doubling time"). These are presented to the class using information and examples drawn from the current issue of the Population Reference Bureau's "World Population Data Sheet" and the most recent census for the nation,

state and local community. (Currency and local relevance of these sources are invaluable in maintaining interest.]

The second function of the section is to introduce the students to science fiction as it pertains to population. More specifically, this involves, first, the comparison of the goals of science fiction and those of Sociology, much in the same way as it was presented earlier in this paper. In addition, a typology of science fiction is offered, one which includes a description or characterization for the category of "speculative fiction" or "social science fiction." It is from this category that virtually all of the materials for the class are drawn.

The section on growth starts off from the position that population growth is closely associated with technological development. This, in turn, is related to the works of Herbert Spencer (*Principles of Sociology*) and Emile Durkheim (*Division of Labor*) in which the argument (essentially) is that growth in population results in an increase in the degree of functional differentiation. This provides an excellent vantage point to begin the discussion of the first two short stories (see the above outline), both of which illustrate the converse--that population will decline in size (and in degree of functional differentiation) with reductions or losses of technology.

Still within the section on Growth, we next move to the grim predictions of Thomas Malthus and the more recent work of John Calhoun, both of whom address the general issues of population and resources. In this context, three short stores are discussed, all of which relate to conditions of high density and limited resources. Thirdly, to close the section, the spectre of pollution (air, water, noise, visual--*all* of them) is raised. Here, three additional stories are offered as possible "alternative futures" for American society. "The Darwin Sampler" in particular raises the issue of dependence upon purely technical solutions to current population-ecological "crises."

The third section, The Vital Processes, begins with the topic of fertility. From the Heer text, the focus is upon Kingsley Davis' and Judith Blake's excellent categorization of mechanisms which directly affect fertility. "Randy's Syndrome," a story about a baby who refuses to be born, adds a dimension of impact to their paradigm.

From fertility we move to the general process of maturation and ageing. The chapter from *Society and Population* reinforces some of the materials introduced at the beginning of the course. The short stories focus upon two significant stages in the life cycle, adolescence ("Coming-of-Age Day") and the declining years ("Golden Acres"). The first provides a springboard for discussions of topics such as "rites of passage," adjustments to status changes, and the consequences for other social units. The second is particularly useful for discussions relating to the entire variety of problems faced by the aged, their families, and the structures that deal with them.

Finally, the section closes with the topic of Mortality.* In this case, the emphasis is upon some of the differentials that exist--age, sex, race, socio-economic status, and so on. This, of course, also relates to the beginning of the course when various measures of mortality were introduced. The short story, "Terminal", is directed at some of the ethical and cultural issues associated with death, the dead, and the dying.

The last of the major sections concerns population and policy. The several short stories all describe situations which are implied by some sort of policy. One in particular, "Statistician's Day," concerns an occupationally-based mortality policy that is initiated in response to population stability.

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*Unfortunately, I have yet to find any Science Fiction materials on the topic of migration. Therefore, coverage of the topic depends entirely upon the brief chapter in Heer and class presentations.

The class presentations focus on the notion that effective population policy should, in some way, deal with all three of the vital processes, either directly or indirectly.

In all three of the major substantive sections, the attempt is made to indicate some of the wide-ranging relations that exist between population phenomena and the gamut of social-structural phenomena. This of course follows from the population studies orientation. Thus, the readings (both science fictional and traditional), class presentations, and class discussions are all carefully directed at such a goal. The assumption is that population studies, in addition to requiring some knowledge of basic demography, also requires a characteristic viewpoint (or, if you will, "feel for the subject"). Moreover, since either requirement would seem to be a valid starting point in the educational process, the obvious heuristic advantage lies in taking the latter first. In this way, motivational levels start and remain high.

An Evaluation

I have now taught this course twice using the science fiction approach. Thus, the course structure described in the previous section is a bit the result of an evolutionary process. The first time, I gave the bulk of the "basic" demography and population studies materials at the beginning. In addition, once we got into the science fiction materials, the discussions were very informal (even, at times, rambling). Consequently, the second time around, I reduced their initial exposure to population studies and tried to spread it more evenly throughout the course. In addition, I exercised a bit more control over the class discussions.

On the whole, my evaluation of this approach to population problems is positive. I am convinced that, if nothing else, it has resulted in a higher degree of student interest and participation. (This, by the way, holds the second time as well when the discussions were more formalized.) I also believe that the inclusion of the science fiction materials has "driven home" the overall approach of population studies much more effectively.* With this approach, not only are they expected to remember how others relate population to social structure, they are required to do it themselves (See Appendix B concerning the tests). And I am a firm believer in the old adage that "experience is the best teacher."

However, there are trade-offs. My coverage of the traditional subject matter has been somewhat reduced. For example, except for the materials in Society and Population, a couple of films, and occasional information in my own presentations, a world-wide perspective has largely been sacrificed.

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*One student's statement is especially gratifying, "I realized...*in a geography course*...that I learned quite a bit in this course." (my italics)

The focus is on the United States, past, present, and future. Furthermore, and also because of the reduction in time available, it is not feasible to be technically complete in regard to some of the rates and measures. For instance, in computing fertility and mortality rates, mid-point population is not mentioned; and in regard to "doubling time," the short-hand method of dividing the rate of increase into 70 is used rather than the more complex compound interest formula. While these omissions do result in a degree of inaccuracy (and even ignorance), I feel that they are justifiable given the nature of the course and its audience.*

The student evaluations were also mixed, but on the whole positive. Fewer than 20 percent of the responses were negative in character, and those tended to focus on specific topics or readings. One suggestion from the first class that I have incorporated in the second is the presentation of more traditional theoretical material (e.g., Durkheim and Spencer, Malthus, Blake and Davis), and more "real-world" examples. In addition, two suggestions by the second class will be added in the future. The first involves additional audio-visual support. (I only used two: "Standing Room Only" and "Population-Ecology",) The second is to spread the group presentations out over the quarter, timing them so they relate to the subjects under study at the time. This might work, especially if films, tapes, etc., can be used to fill in gaps.

Finally, the two classes ranked the readings. These are reported in Table 1 with my own ranking and an "average" of the three. I suspect the

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*Fortunately, at this university the serious student or pre-professional can follow it up with a course or two that will help correct these deficiencies. Were this not the case, I would be more concerned about the issue.

differences are due largely to experience. While many of the students apparently prefer their information handed to them on a platter so to speak, I am perfectly willing to let my imagination and background fill in the details.

TABLE 1: Preference Rankings of Science Fiction Readings

Short Story*	1st Class	2nd Class	Van Valey	"Average"
Tomorrow & Tomorrow & Tomorrow	2	1	7	1
Golden Acres	5	4	2	2
The Waveries	1	13	1	3
The People Trap	3	2	11	4
Randy's Syndrome	8	6	5	5
Statistician's Day	9	11	3	6**
A Modest Proposal	12	3	8	7**
Disposal	4	9	12	8
The Darwin Sampler	16	5	6	9
'Repent, Harlequin' Said the Ticktockman	7	7	17	10
Coming-of-Age Day	14	14	4	11
Broke Down Engine	15	8	10	12
We All Die Naked	6	16	14	13**
Terminal	13	10	13	14**
The Subliminal Man	10	12	15	15
After 300 Years	17	15	9	16
Problems of Creativeness	11	17	16	17

*Some suggested alternatives from the appended bibliography include: "The Mary Celeste Move" (Vital Processes); "Billenium" (Growth); "Population Control, 1986" (Policy); "The Tunnel Ahead" (Policy); "Seventy Years of Decpop" (Growth or Policy); "Welcome to the Monkey House" (Policy); and "The Marching Morons" (Growth or Policy).

**indicates tie scores.

APPENDIX A

A BRIEFLY ANNOTATED BIBLIOGRAPHY

The following short stores have been produced by an unorganized labor of love. I simply bought every anthology I could lay my hands on, and read them from cover to cover. Certainly it could be accomplished in a more reasonable and systematic manner. Maybe later.

One other point, these selections are the ones that seemed appropriate to me. Someone else might produce a rather different set (although I should hope not). In any event, have at them.

Aldiss, Brian, "Randy's Syndrome," The Best from Fantasy and Science Fiction: 17th Series: The Birth process and how it could be interrupted!

Ballard, J. G., "Billenium," Voyages: Scenarios for a Ship Called Earth: High density living--four square meters of floor space per person.

Ballard, J. G., "Build-Up," Chronopolis and Other Stories: The ultimate in urbanization.

Ballard, J. G., "Chronopolis," Chronopolis and Other Stories: A world without time.

Ballard, J. G., "The Subliminal Man," Eco-fiction: Advertising and the goal of economic growth.

Bates, Russell, "A Modest Proposal," Clarion II: Reincarnation--a possible relation between birth and death.

Blish, James, "Statistician's Day," Best Science Fiction: 1971: Mortality policy as a result of population control and economic stability.

Blish, James, "We All Die Naked," Three for Tomorrow: New York City in a pollution-filled future.

Brown, Frederic, "The Waveries," Above the Human Landscape: Technological decline and its results.

Coney, Michael G., "The Sharks of Pentreath," The 1972 Annual World's Best Science Fiction: Vacationing in an era of overpopulation.

Daniel, Molly, "Winter Housecleaning," Clarion II: Ageing; adjustments of the elderly to approaching death.

Disch, Thomas M., "Problems of Creativeness," The Best from Fantasy and Science Fiction: 17th Series: Genetic testing and population control.

Doremieux, Alain, "The Vana," 13 French Science-Fiction Stories: A substitute for marriage?

Ellison, Harlan, "'Repent, Harlequin' Said the Ticktockman," World's Best Science Fiction (2nd Series): A master time schedule for society, and people are late.

Farmer, Philip Jose, "Seventy Years of Decpop," Best Science Fiction for 1973: Adjustment to a declining population.

Glaser, Alice, "The Tunnel Ahead," Voyages: Scenarios for a Ship Called Earth: Depopulation without discrimination.

Goulart, Ron, "Broke Down Engine," Broke Down Engine: Mortality policy, computer controlled.

Goulart, Ron, "Calling Dr. Clockwork," Broke Down Engine: Medical care by machine for the masses.

Goulart, Ron, "Disposal," Broke Down Engine: Solid waste removal, what happens when it breaks down.

Goulart, Ron, "Nobody Starves," Broke Down Engine: Mass processing of individuals in a mass society; "holes" in the system.

Goulart, Ron, "Terminal," Broke Down Engine: Mortality policy, how to handle the elderly.

Herbert, Frank, "The Mary Celeste Move," Eco-fiction: Effects of high speed society--migration.

Jorgenson, A. K., "Coming-Of-Age Day," The Year's Best Science Fiction: 11th Annual Edition: Sex education and adolescence; universal "contraception"!

Kornbluth, C. M., "The Marching Morons," Science Fiction Hall of Fame: Overpopulation and genetic deterioration.

Laumer, Keith, "In the Queue," Nebula Award Stories Six: Waiting, waiting, waiting in line for...what.

Laumer, Keith, "The Lawgiver," The Year 2000: Compulsory population control affects even the powerful.

Mille, Pierre, "After 300 years," 13 French Science-Fiction Stories: Small-scale society minus technology.

Paredes, Horacio V., "Population Control, 1986," Voyages: Scenarios for a Ship Called Earth: War as mortality policy.

Peck, Richard E., "Gantlet," Orbit 10: A ride in an armored subway--to get home from work.

Reed, Kit, "Golden Acres," Above the Human Landscape: A retirement community, in spades.

Rocklynne, Ross, "Randy-Tandy Man," Universe 3: Bigotry, prejudice, and discrimination--a structural solution.

Russell, Ray, "The Darwin Sampler," The Future is Now: Suicide and survival of the "fittest."

Sheckley, Robert, "Gray Flannel Armor," Nations: Unlimited: Updating the courtship process.

Sheckley, Robert, "Holdout," Notions: Unlimited: Racial prejudice--with a twist.

Sheckley, Robert, "Morning After," Notions: Unlimited: Recruitment and adjustment of long-distance emigrants.

Sheckley, Robert, "Paradise II," Notions: Unlimited: A food duplication process.

Sheckley, Robert, "The People Trap," The Best from Fantasy and Science Fiction; 18th Series: Super-urbanization and high density living(?).

Sheckley, Robert, "Watchbird," Notions: Unlimited: A machine that stops murder--very well.

Silverberg, Robert, "Black is Beautiful," The Year 2000: Blacks run the cities and the whites are stuck outside.

Spinrad, Norman, "No Direction Home," New Worlds Quarterly #2: Counter-culture as culture; drugs and society.

Swift, Jonathan, "A Modest Proposal": Cannibalism; written in 1729.

Vonnegut, Kurt, Jr., "Tomorrow and Tomorrow and Tomorrow," Eco-fiction: Overcrowding, overpopulation, and the status structure.

Vonnegut, Kurt, Jr., "Welcome to the Monkey House," Welcome to the Monkey House: compulsory birth control and ethical suicide.

Wissner, Robert, "Frozen Assets," Clarion VI: Cryogenics and death.

Friends and acquaintances have also suggested the following variety of other materials--collections, periodicals devoted to the genre, and so on. I have not yet been able to review any of them, so cannot judge.

From Apemen to Spacemen, Doubleday

Worlds in the Making, Prentice-Hall

Nightmare Age, Frederik Pohl (1970)

The Ruins of Earth, Thomas M. Disch (1971)

Extrapolation

Riverside Quarterly

Journal of Popular Culture

In addition, I have looked through three anthologies put together for use in classes similar to my own (though not necessarily in population). These are *particularly* helpful.

McNelly, Willis E. and Leon E. Stover
1972 Above the Human Landscape. Pacific Palisades, California: Goodyear Publishing Company.

Ofshe, Richard
1970 The Sociology of the possible. Englewood Cliffs, New Jersey: Prentice-Hall.

Theobald, Robert
1972 Futures Conditional. Indianapolis, Indiana: Bobbs-Merrill.

This last group is composed entirely of full-length novels. Some are simply excellent. In fact, I sometimes wonder if my colleagues have been collaborating. Others are not so good or not so relevant. In either event, I will refrain from judging. Read them.

Brunner, John	Stand on Zanzibar	(1969)
Burgess, Anthony	The Wanting Seed	(1963)
Charbonneau, Louis	No Place on Earth	(1958)
del Rey, Lester	11th Commandment	(1962)
Harrington, Carolyn	Edict	(1971)
Harrison, Harry	Make Room, Make Room	(1966)
Jones, D. F.	Implosion	(1967)
Kamier, Nick	The Herod Men	(1971)
Maine, Charles Eric	Alph	(1972)
Mason, Douglas R.	Matrix	(1970)
Pincher, Chapman	Not With a Bang	(1965)
Silverberg, Robert	The World Inside	(1972)
Simak, Clifford D.	City	(1952)
Stewart, George	Earth Abides	(1949)

APPENDIX B

SUGGESTED TESTING OPTIONS

S-220
TAKE HOME EXAM #1

DIRECTIONS: Although I didn't intend to, all questions have a three page limit. These are standard double-spaced typed pages or their equivalent (200-250 words). If you do not type your response, be sure that it is legible.

Be concise in your thinking and in your writing. Don't go off on tangents. In fact, I would strongly recommend thinking completely through a position before you write anything (except an outline), then draft your position, then work on something else for awhile, then prepare a final statement. This takes time, but it also provides you with an optimum set of conditions for organizing and presenting your thoughts.

Please do not discuss the questions with anyone else in the class (except me). I really don't care if you discuss them with others outside the class (other faculty, friends, relatives, pets, etc.).

Choose any two of the following questions. Please read them carefully.

1. A set of concepts labelled the ecological complex was presented in class. It was argued that with these four broad variables we could describe the major structural relations of any system. For any two of the eight short stories we have read, identify the major assumptions the author has made concerning the concepts of the ecological complex. (Remember, it is possible to make more than one assumption about any of the concepts. This is especially true regarding Organization.) In addition, indicate the degree to which those assumptions compare or contrast with similar assumptions that can be made about contemporary American society. (In short, provide three sets of assumptions--one current and two literary; then compare and contrast them.)

2. In some of the readings, the authors (whether by choice or chance) stressed the portrayal of certain aspects of society (to the minimization and, in some cases, exclusion of other aspects). NOTE: the aspects stressed may be but are not necessarily the same as the assumptions discussed in question 1 above. Our readings are divided into three groups below; for any two groups (not readings) indicate those aspects that you feel the author has overlooked or understated. (Support your choice(s) with reasons.)

   After you have completed the above task, present a brief statement (a paragraph or two should do) describing what major changes would be necessary in the existing story to include any one of the aspects which you have noted above.

GROUP I	After Three Hundred Years The Waveries
GROUP II	We All Die Naked Disposal The Darwin Sampler
GROUP III	Tomorrow and Tomorrow and Tomorrow The Subliminal Man The People Trap

3. Select any one story from group II or III (see question 2 above). Under the assumption that its alternative future is reasonable, discuss the kind(s) of policies that would most likely produce it (and the reasons why). In other words, what kind(s) of things would (or would not) have to be done to result in any one of those societies and why (or why not)?

4. So far, we have read material relating to declining populations and growing populations. Suggest some of the features of an alternative future in which the basic assumption is stability. That is, trace out some of the consequences of having and maintaining a stationary population (Zero growth). NOTE: The particular features will very likely be highly dependent upon the particular mechanism(s) or policy which you feel will result in stability. So be careful of your choice of policy.

S-220
TAKE HOME EXAM #2

This section of readings has dealt primarily with the vital processes which operate in all societies: Birth, Death, Migration. In addition, we have focused on the maturation process and the age structure of a population. Earlier readings and the mass media typically concentrate on the fertility aspect, seldom dealing with either mortality or migration.

Write a three page maximum essay which relates either mortality or migration to the social structure.

I suspect you will find it easier to do in the following manner: (1) select or invent some change in either mortality or migration (e.g., radical increase, decrease, severe differential, etc.); (2) trace its probable effects upon other population phenomena (e.g., age distributions, fertility, and so on); then (3) trace these several effects through the social structure (e.g., family, stratification system, the economy, religion, political structure, etc.). Here it might be wise to limit your scope to something smaller than the nation.

If you wish, you may simply describe some future system--that is, write your own short story. Or, you may use a paragraph outline form. Should you use the latter, be sure to support or justify your arguments.

S-220
TAKE HOME EXAM #3

Decide on some general population-related "goals" for this country. Then, briefly outline a comprehensive population policy that you feel will enable us to reach them. Do not feel restricted by present reality (though if you can devise one that would be congruent with the values of contemporary society, all the better).

Be sure to support your choice of policy elements. (An alternative approach might be to explain why other policy elements have been excluded.) Also, try to provide me with some estimation of how your policy would be put into effect--and, how effective it would be at reaching your goals.

Maximum 4 pages.

S-220
FINAL EXAMINATION

Construct an alternative future for American society. (6-8 pages maximum. Remember, the Darwin Sampler is less than 3 pages.)

As I said in class, this is (or can be) an incredibly complex question. So, let me suggest a strategy. Choose (or invent) a policy or policies and determine the effect(s) on population (this means numbers, geographic distribution, and/or other population-related matters). Then determine the effects of those changes in population on the other aspects of society (you could use POET). In this way you can produce an alternative future that has at least as much logical consistency as anything you've read for class.

Some additional advice: Be careful not to pick too comprehensive a policy. Each facet will have wide-ranging ramifications, and very many facets will become cumbersome. Also, have it clear in your mind what direction you expect your alternative to take you (reduce population, increase it, move it around, etc.). Otherwise the page limit will restrict you. Finally, take heed from the things you've read--don't try to do too much. You could even pick some subsystem of society or subgroup of the population to work with.

I do ask that you not simply reword the alternative figures you have read (either in class or elsewhere). However, this does not mean you cannot use these materials. Many of the readings suggest possible directions, vehicles for expression, or even policies, any of which can be used so long as you develop it in your own way. All I ask is that you provide a sketch of an alternative future, and (preferably, but not necessarily) the logical relations that led up to it.

The due date for this exercise is the last regular day of classes. We will meet on the scheduled final examination day for evaluations, and distribution of finals and course grades.

Think hard, but have fun, too.

APPENDIX C

SUGGESTED CLASS ASSIGNMENTS

Following are two types of assignments that I have had some success with. The first, the "Demographic Profile," requires considerable time and effort on the part of the student, so care should be exercised in the amount of additional work required. The second, the group reports, has the advantage that the students select the topics to be covered, and work on the topics about which they have the most interest. Therefore, motivation remains high (I have also had some come up with interesting material that I myself can use). Note also, with this assignment I have tried letting them evaluate themselves.

S-220
POPULATION: ANALYSIS AND PROBLEMS

Due_____

In lieu of a term paper, each of you must prepare a "demographic profile" for one of the countries of the world (excluding the United States). The profile should include information on at least the following topics (others may be included at your discretion).

1. population size
2. Crude Birth Rate
3. Crude Death Rate
4. natural increase
5. amount of immigration and emigration (if any)
6. degree of urbanization (e.g., number and percent living in cities--Be sure to give the particular country's definition of a "city" or "urban area")
7. major kinds of income-producing activity for the country (whether it is industrial, commercial, producer of raw materials, etc., and the major two or three products)
8. Gross National Product
9. per capita income (or per capita Gross National Product)
10. age and sex distribution of thecountry (It might be a good idea to construct a "population pyramid")
11. the year of the country's first census and the year of the most recent census
12. income distribution of the country (who has the money, and who doesn't?)
13. the racial mix of the population (if more than one)
14. whether or not there is a government-supported program with respect to family planning (also, any significant privately-supported ones)
15. rate of growth of GNP
16. rate of growth of agricultural production
17. the available forms of transportation and communication and the frequency with which they are used
18. major causes of death
19. life expectancy for both males and females (or, if it is not available by sex, the average life expectancy)

In every case above, full bibliographic citations will be required for each piece of information. Always be absolutely sure to specify the time period involved (e.g., crude birth rate [1960] - 28.6 per thousand, natural increase [1960] - 12.5 per thousand). Also, if a given piece of information is not available for your particular country, be sure to note this. This will be true for some kinds of information in many countries. Otherwise, I will be forced to conclude that you did not have the initiative to locate it.

Possible sources of information:

Demographic Yearbook
Population Index
Compendium of Social Statistics
Statistical Yearbook
Demography
Any major text (see supplementary readings on syllabus)

ALWAYS READ FOOTNOTES!!! They tell about important exceptions to sources of error; other sources of information, etc.

My intent in making this assignment is fourfold. First, as I do not believe in term papers at the introductory level, it functions as a useful substitute. Second, its completion will further the development of several kinds of skills--the presentation of data; the organization of information for logical, concise presentation; the experience of "digging up" what may turn out to be some very obscure facts; the knowledge of the kinds of concepts used by those people interested in population studies and the kinds of data that are available. Third, because it enhances the above-mentioned skills, it should sensitize the student to the subject matter of population in a manner impossible to communicate in a class-room lecture situation. Moreover, it should make for more accurate and involving discussion of any materials presented in class. Fourth, and finally (and also of least importance), it will provide both of us a yardstick by which we can measure your performance (and thus your grade) in the course.

S-220
Population: Analysis and Problems

The following is a list of topics that previous classes have specifically requested for this course. Most have been covered at one time or another. I would like you to choose those topics which you would most like us to cover this quarter. To do so, simply circle the number of the topic. If you have any other suggestions, add them below.

1. Forced family planning
2. Problems associated with rural-urban migration
3. Urban population problems
4. Abortion
5. Sterilization of specific individuals (e.g., retarded, criminals, etc.)
6. Migration off the earth as a solution to over-population
7. Notions of "optimum" population
8. Population problems in Colorado
9. Quality of life vs. Quantity of life
10. Problems of disposal of humans after death
11. Group responses to population control proposals (e.g., religion, sex, ethnic group, age, etc.)
12. Techniques of contraception
13. Physical-psychological consequences of overpopulation

The above is passed out to the class on the first day or so. If there are additional suggested topics, a revised list is distributed. When the final set of topics is established, each student is given a list and told to identify his or her three top preferences. (It has been my experience that virtually all receive their first or second preference). Then, groups are constituted for each topic.

Presentations by these groups to the class have involved outside speakers, debates, questionnaires, discussions, skits, and films. In practically every case, the students have expended considerable effort and evaluated them very positively.